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PSYCHE

Vol. 64 September, 1957 No. 3

THE COLLEMBOLA OF LEBANON AND WESTERN SYRIA

PART II.

FAMILIES CYPHODERIDAE AND ONCOPODURIDAE[1]

By K. Christiansen
Grinnell College, Grinnell, Iowa

In 1906 Börner described *Cyphoderus assimilis* from material partly collected in Egypt. Since that time the family Cyphoderidae has been well represented in the collections from the region until at the present moment nine species have been recorded from Lebanon, Palestine, Egypt, and Iraq. Four of the nine species mentioned above were again recovered in the course of this research and two new species were uncovered. The relatively poor recovery of previously located species along with the extremely spotty nature of the distribution of the collections appears to indicate a small sampling of the total population of this family present in the area.

The family Oncopoduridae has not previously been reported from the area. The single new species described herein does not give any new insight into the biogeography of the region.

Genus *Cyphoderus*

Delamare-Deboutteville (1948) in his excellent work upon Termitophilous and Myrmecophilous Collembola divided the old genus *Cyphoderus* into a number of genera. Since two of the species here examined indicated a clear need for the re-examination of these genera, I have con-

[1] Published with the aid of a grant from the Museum of Comparative Zoology at Harvard College. Part I (General Considerations and the Family Onychiuridae) was published in *Psyche* 63 (4): 119-133, 1956.

sidered his genera as subgenera (*Cyphoda* and *Serroderus*) throughout, merely to avoid confusion. Three species had been previously recorded from Lebanon. In the present work two of these were re-discovered, and species previously recorded from Egypt and Palestine were found. Along with one new species, this brings the total known from the area to six species.

Cyphoderus genneserae Carpenter

Cyphoderus genneserae Carpenter, 1913, Jour. Proc. Asiat. Soc. Bengal 9:215

This species is fairly widespread throughout the southwestern Syrian Region. Handschin and Carpenter reported it from Palestine and the variation described by Handschin as *"aethiopica"* has been found in several regions in Central Africa. I have recovered the species from two localities: Litani River near the mouth on August 23, 1953 (Asfour and Salaymeh Coll.) and Antelias Stream Bank on November 9, 1952. Both of these localities are in the coastal plain of Lebanon and all of the specimens (about 25) agree with the descriptions and figures shown in Handschin, except in one startling respect: The presence of only two fringed scales in the inner row of dental scales. This characteristic places the species in the genus *Serroderus* of Delamare, although it lacks any hint of the gradation between scale and seta structure described as characteristic of the genus. The species of this genus which it most resembles is *S. sublimis* and this species also lacks the above mentioned characteristics. In spite of the difficulty of separating the specimens at hand from the last mentioned species I feel that the exact detail for detail identity of the present form with the described *genneserae* leaves little doubt that the existence of only a single pair of internal scales is a local variation. This, of course, points up the necessity of revising the limitations of the genus *Serroderus*, but this is beyond the scope of the present paper. The only other modification of Handschin's description is that in a few specimens the tenent hair can be seen to have a minutely clavate tip, visible only under the highest magnifi-

cation. In both populations the *aethiopica* type of mucronal form was present in addition to the normal type.

Cyphoderus (*Cyphoda*) *grassei*
Cassagnau & Delamare-Deboutteville

Cyphoda grassei, Cassagnau & Delamare, 1951, Biospeologica **75**: 384-385.

This species was described by Cassagnau and Delamare from a single specimen. The relative size of the mucro and dens (1-10) was taken as a characteristic of the species and upon this basis it was placed in the genus *Cyphoda*. I have several series of specimens which I have identified as this species. In one of these I have five specimens. The relative sizes of the mucro and dens varying as follows: 1-10, 1-9, 1-8.5, 1-7.5, 1-7. In a second series of three specimens the sizes are: 1-10, 1-6, and 1-5.5. In still a third series both specimens have a mucronal dentes ratio of 1-5.5. This presents a problem since the sole basis for separation of members of the genus *Cyphoda* is the relative mucronal length. Whatever the eventual decision concerning this genus, the species *grassei* can no longer be considered part of the genus.

In addition to this variation in mucro the species shows another peculiarity in that the tunica is absent in a few specimens, particularly young forms. In over 95% of the specimens seen, a clear tunica is present on the ungues. Perhaps the most unique characteristic of the group is the shape of the mucro. This is particularly noticeable upon specimens having a relatively large mucro, but can be seen upon all. The mucro has in addition to the apical hook, a very shallow anteapical tooth. This condition is always the same and places it directly on a line between the two groups bidenticulati and inermes.

Distribution: Hammana, Lebanon, August 28, 1952 and July 28, 1957. Vic. East Base Quornet es Sauda Lebanon, elev. 2200 meters, July 1, 1953; Vic. Turkish Border Latakia, Syria, August 2, 1953, lat. 35° 50″ long. 36° 01″; Dahr el Ain, Lebanon, October 10, 1951.

Cyphoderus (Serroderus) spinatus n. sp.
Plate 6, figures 9-11, Plate 7, figure 8

Body oval, head bluntly oval with well developed mouth-

parts. White without eyes or any indication of pigment. Antennae four-segmented with first and second segments subcylindrical, third segment short and swollen apically, and fourth segment fusiform. Clothing of fourth segment of numerous setae some curved acuminate and ciliate, others smooth blunt and sharply curved. Both varieties decrease in size apically. The remainder of antennal segments are similarly clothed except that ciliate setae become relatively larger and straighter, and the smooth setae are largely limited to the ventral surfaces. The third antennal sense organ of two blunt ovoid stalked knobs and a pair of small slender, sharply angled blunt setae.

The body well covered with fine scales. Large ciliate acuminate setae present on the ventral surface of the animal and posterior two segments. Body with scattered short to long slender bothriotrichia.

Legs with numerous short acuminate setae. Tenent hair stout and pointed on all legs. Unguis stout, sharply acuminate with paired basal prominent teeth, two small but definite median teeth. Apical-most tooth at about mid-level of unguis.

Manubrium with normal clothing, dens with acuminate ciliate setae, ciliate and smooth scales and spines (see Plate 6, fig. 10). Outer row of dorsal fringed scales six

---

Explanation of Plate 6

Figures 1-5 *Oncopodura ambigua* n. sp. 1. Claw, paratype, approx. 1000 x. 2. Habitus, setae and scales omitted, holotype, approx. 100 x. 3. Left postantennal organ, paratype, approx. 1000 x. 4. Third antennal sense organ, paratype, approx. 2000 x. 5. Dens and mucro, holotype, approx. 2000 x. Figures 6-8 *Troglopedetes canis* n. sp. 6. Detail of clothing of antenna, with different types of setae mentioned in description labelled. Small lower diagram shows whole fourth segment with expanded part hatched, detail holotype, approx. 1000 x. 7. Front claw, holotype, approx. 1000 x. 8. End of dens and mucro, paratype, approx. 350 x. Figures 9-11 *Cyphoderus spinatus* n. sp. 9. Clasp organ at base of dens, paratype, approx. 1000 x. 10. Mucro and dens, holotype, approx. 400 x. 11. Hind foot, paratype, approx. 400 x. Figure 12. *Cyphoderus assimilis* Börner. Mucro and dens of specimen from Syria, approx. 400 x.

CHRISTIANSEN — CYPHODERUS

in number, distalmost strikingly larger than remainder. Inner row with two scales and in addition two short stout spines which appear to take the positions normally occupied by scales. If we consider the two pairs of spines as equivalent to scales, the group ends up as part of Delamare's "multidentati group" to which it shows a number of similarities. Taken from one locality; Jisr esh Chouer, Syria, September 21, 1953. In swamp, Berlese funnel sample, wet soil mixed with dead reeds and roots. Mucronal formula (after Delamare) aA1A5.

Variation

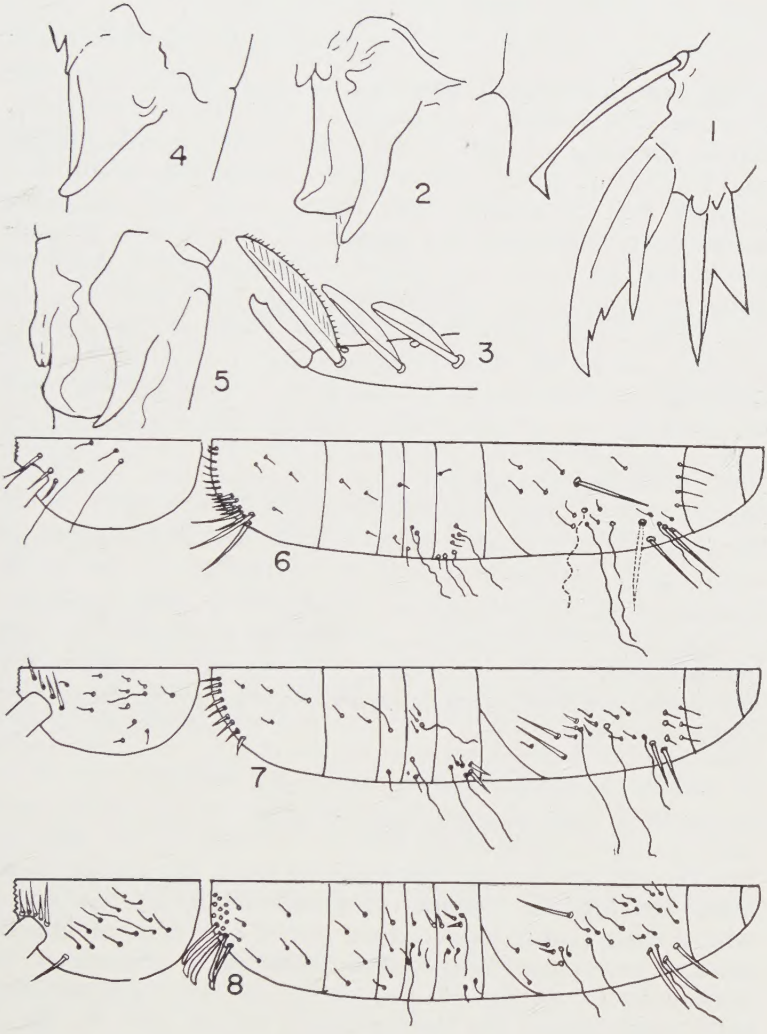
Only four specimens were seen and in this series little variation was noted. In one specimen the unpaired teeth were reduced to one extremely minute tooth on the first two pairs of legs. The external row of fringed scales were five in number on two specimens.

Discussion

The presence of spines along with the fringed setae on the dens serves to separate this species readily from all previously described species of the genus. The presence of only two fringed scales on the internal row in this species would appear to place the species in Delamare's *Serroderus*. As is pointed out elsewhere the limits of this taxon need re-definition.

Explanation of Plate 7

Fig. 1. *Cyphoderus assimilis* Börner. Claw, specimen from Syria, approx. 500 x. Fig. 2. *C. genneserae* Carpenter. Clasp organ at base of dens, specimen from Lebanon, approx. 1200 x. Fig. 3. *C.* (*Cyphoda*) *grassei* Cassagnau and Delamare. Mucro and tip of dens typical Lebanese specimen, approx. 600 x. Fig. 4. *C.* (*Cyphoda*) *grassei* Cassagnau and Delamare. Basal dental organ, approx. 1200 x. Fig. 5. *C. assimilis* Börner. Basal dental organ, specimen from Syria, approx. 1200 x. Fig. 6. *C.* (*Cyphoda*) *grassei* Cassagnau and Delamare. Semidiagrammatic representation of dorsal chaetotaxy. Fig. 7. *C. genneserae* Carpenter. As above, specimen from Lebanon. Fig. 8. *C. spinatus* n. sp. As above, paratype.



CHRISTIANSEN — CYPHODERUS

Cyphoderus assimilis Börner
Plate 6, figure 12, Plate 7, figures 1, 5

Cyphoderus assimilis Börner, 1906, Mitt. Naturhist. Mus. Hamburg 23:181.

The true identity of this species is a difficult problem to solve. The species *C. assimilis, C. similis, C. subsimilis,* and *C. simulans* all have in common: bidenticulate mucro, unguis without tunica and with two unpaired teeth, only a single well developed basal ungual tooth and a clavate tenent hair. Although the absence of the tunica, the unpaired median tooth, and clavate tenent appear to show some variation and much difference of interpretation, we have little choice other than to accept these as real characteristics. It would appear from Börner's description that his original diagnosis is a composite of two species. One of these is the species later described by Folsom as *C. similis.* The evidence for this is as follows: First Börner, 1906, described the species from two collections; one from Egypt, and one from orchids from the West Indies. Since the form Folsom described was from the West Indies, it seems quite probable that it is equivalent to the latter form seen by Börner. If this is accepted then a number of facts indicate that the description is composite, and the Egyptian form is another species. Börner says that the inner terminal scale is shorter to somewhat longer than the mucro. In the West Indian and Central American specimens it is never as long as the mucro. He says there is usually a small lamella upon the mucro; the West Indian and Central American material always have some lamella. This would mean that to account for his description the species seen by Börner were two: one an Egyptian form sharing the common characteristics of the group with a dental scale longer than mucro and without lamella on the mucro, and a second form later described by Folsom as *C. similis. C. subsimilis* of Delamare satisfies both requirements for the Egyptian species, but the figure of the unguis differs strikingly from that given by Börner in 1913. I have collections from Syria which satisfy all of the characteristics listed above. The one major disagreement between the species is the relative size of the

mucrones. Since this, as most ratio distinctions, is very unstable it is not a serious objection. If this is accepted as the true *assimilis* then the following table can be used to separate the four species:

	assimilis ?	*similis*	*subsimilis*	*simulans*
dental formula	5/6	5/6	4/6	6/6
internal setae of tibiotarsus	"smooth"	1 row "smooth"	?	?
mucro	no lamella	with lamella	no lamella	no lamella
distal scale / mucro	longer	shorter	longer	shorter

Distribution: Bahr Atibe, east of Damascus, Syria, July 10, 1953.

Cyphoderus albinus (Nicolet)

Cyphoderus albinos (Nicolet), 1842, Nouv. Mem. Soc. Helv. Sci. Nat. **6**:1-88.

Cassagnau and Delamare reported this from Dahr el Ain in Lebanon. I have two specimens taken from Latakia Syria, which appear to be this species. Unfortunately both were damaged in capture so that a certain identification is impossible.

Cyphoderus bidenticulatus (Parona)

Cyphoderus bidenticulatus (Parona), 1888, Ann. Mus. Civico Genova Ser. **6**:83.

Reported from two caves in Lebanon by Cassagnau and Delamare.

Cyphoderus agnotus Börner

Cyphoderus agnotus Börner, 1906, *op. cit.*: 180-181.

Although this form has not been recorded from Lebanon or Syria its widespread occurrence throughout Palestine makes it quite probable that it does occur in the southern part of this area.

Genus *Troglopedetes*

Cassagnau and Delamare recorded two new species of this cavernicolous genus from Lebanon (*op. cit.*). This known species of the genus is largely circum-Mediterranean in distribution; but, the existence of Paleotropical and Neotropical members indicates the possibility of a tropicopolitan but still undiscovered distribution. One new species was discovered in this work bringing the known Syrian-Lebanese forms to three.

Troglopedetes orientalis Cassagnau & Delamare

Troglopedetes orientalis, Cassagnau & Delamare, 1951, *op. cit.*: 385-387.

These authors recorded this species from three localities in Lebanon. One record was non-cavernicolous.

Troglopedetes vandeli Cassagnau & Delamare

Troglopetes vandeli, Cassagnau & Delamare, 1951, *op. cit.*: 387-388.

Taken from one cave in Lebanon.

Trogopedetes canis n. sp.

Plate 6, figures 6-8

Facies characteristic for the genus. Antennae with basal three segments subcylindrical and fourth segment divided in middle and elongate fusiform in shape. Antennae covered with a variety of setae of different types (see Plate 6, figure 6). Setae of Type A decreasing in size apically and with the ciliations becoming more prominent. Setae of types F and B are limited to the fourth antennal segment while those of type C are most numerous here and upon a limited region on the inner margin of the apex of the second segment. Fourth segment with two scale-like knobs having a lateral axis, and a pair of small and oval blades projecting out from this. In addition nine smooth setae are present. Scales oval, with extremely short fine striations. Dorsum of first thoracic segment with an anterior lateral fringe of large acuminate finely ciliate setae. Because of the dense covering of large scales, the remainder of the body setae are difficult to perceive, but the situation appears to be quite similar to that found in *Cyphoderus*. Dense with a single row of twenty-one spines. Mucro with four very small and two large dorsal teeth.

Tibiotarsi with all setae uniformly ciliate. Tenent hair prominent and clavate. Unguis with basal teeth well developed, one definitely larger, two unpaired median teeth, the apical one being very minute. Median teeth more prominent upon the hind unguis. Unguiculus acuminate and sparsely serrate along its posterior margin.

Variation in dental spines: 22/19, 21/23, 22/21, 19/20, 19/23.

Known only from the type locality: Dog River Cave, Lebanon, July, 1951 on Debris 1 km. inside cave.

Discussion

This species is similar in many respects to *T. orientalis* but differs from this species in the shape of the mucro, the number and disposition of the dental spines, possession of a clavate tenent hair, the type of setae upon the antennae (see below), and the structures of the ungues. In this last characteristic the present species ressembles *T. machadoi* Delamare, but it differs from this form in most respects, most strikingly in the relative length of the mucro.

The setae upon the antennae of these animals furnish an excellent series of characteristics. Unfortunately only three species were available for comparison but as the following table will illustrate, these indicated the value of further investigations of this characteristic.

In addition to this the so-called sense organ of the third antennal segment differs among the three forms (axis central in *ruffoi* and lateral in the other two).

seta type	*orientalis*	*ruffoi*
A	*	longer, ciliation more prominent
B	stalk longer than apical expansion	longer only slightly expanded apically
C	unilaterally finely ciliate	dense mass upon apex of third segment
D	*	straight
E	*	*
F	longer and definitely curved	longer

* signifies similar to that illustrated for *canis*

Oncopodura ambigua n. sp.

Plate 6, figures 1-5

Facies typical for genus. White, without trace of pigment or eyes. All antennal segments subovoid. Antennal segment four equipped with an apical conical projection and four blunt oval "sensory" setae. Remainder of setae of fourth segment slender smooth and acuminate. Third antennal segment with apical organ of two elliptical rods, with marked ladder-like striations, without clearly visible central axis. Remainder of antennae covered with a mixture of smooth setae (as in fourth antennal segment) and heavy conical finely striate setae. Postantennal organ of six lobes, the anterior pair lying at right angles to the long axis of the head, and the remainder radiating backward from this.

Tibiotarsus without any clearly spatulate setae. Unguis untoothed, with a definite "triangular lamella" and an opposing smaller but similar seta. Both structures are attached near the base of the unguis. Empodial appendage simple, external edge straight and equipped with a short apical filament.

Mucro slightly shorter than dens, equipped with an apical and three dorsal teeth. A single large scale is attached to the base of the mucro. Dens clearly subdivided into two portions. Inner dorsal margin of dens equipped with four apically curved heavy ciliate setae. A sixth seta is on the outer margin near the base of the dens. Remainder of dorsal surface with one large scale and five acuminate smooth setae.

Discussion

In the series examined there was little variation outside of relative size. The large ciliate setae upon the inner margin may be five in number. Occasionally the basalmost of these setae is not curved at its apex.

The P.A.O. is often sunken into the head and it is very difficult to puzzle out the exact arrangement of the lobes. The presence of a definite triangular ungual lamella combined with the presence of a six-lobed P.A.O. immediately serves to distinguish this species from all those given in

Bonet (1943). In most characteristics this species would appear to be most closely allied to *O. crassicornis* Shoebotham and *O. cruciata* Bonet, but it may readily be distinguished from both of these by the presence of the ungual lamella.

This animal was extracted from a soil sample with a Berlese Funnel. Since only one locality is known, the range of the animal cannot be determined.

Known only from the type locality: Campus American University, Beirut, Lebanon, various dates, 1953.

Literature Cited (See also Bibliography to Part I)

Bonet, M. F.
1943. Sobre La Classification de los *Oncopoduridae* Anales de la Escuela Nac. Cien. Biol. 3 (1-2):127-153.

Christiansen, K.
1956. The Collembola of Lebanon and Western Syria. Part I. General Considerations and the Family Onychiuridae. Psyche 63 (4): 119-133.

Delamare-Deboutteville, Cl.
1948. Collemboles Termitophiles et Myrmecophiles. Arch. Zool. Experimentale Gen. 85:261-425.

SOME FLIES OF THE FAMILY ASILIDAE (DIPTERA)

By Frank M. Hull
University of Mississippi

In this paper are descriptions of several species and genera of robber-flies.

Zabrops new genus

Type of genus: *Triclis tagax* Williston, 1884. Other American flies put in *Triclis* Loew probably belong here.

Small flies with short, appressed pile and comparatively robust form. From *Triclis* Loew they differ in the gibbous and prominent face, with numerous bristles below and little or no hairs in the upper part. Third antennal segment swollen. Female terminalia generally similar to others in the Laphystini. Length 11 mm.

Head: The face is prominent, short beneath the antenna but rising below into a gently rounded eminence, occupying at least three-fourths of the face. The occiput is prominent below due to the gradual anterior recession of the eye; its pile is dense and fine with 4 or 5 weak bristles on upper occiput. Proboscis short, robust, stout at base and not protruding beyond the face. Palpus minute, composed of 2 short segments. Antenna nearly as long as head; third segment swollen shortly beyond its base, and with style included, is about as long as first 2 segments combined. At its apex it bears a short, stout, spoon-shaped microsegment with enclosed spine. *Thorax*: The mesonotal pile is abundant, more or less appressed and undifferentiated. The lateral bristles are weak and consist of 2 notopleural, 3 or 4 supraalar, 2 or 3 postalar, and 4 to 6 pairs on the scutellum. Prosternum not or only slightly dissociated ventrolaterally. *Legs*: The legs are stout, the hind femur a little swollen distally and all legs with dense, appressed, setate pile. The hind femur bears 4 dorsolateral bristles, 2 lateral bristles and 3 dorsomedial bristles, which are near the apex; the ventral surface of both hind femur and tibia have a dense brush of fine,

erect pile. Tibial bristles rather strong; no spine on anterior tibial apex. Claws sharp, pulvilli and empodium long. *Wings*: The marginal cell is widely open, the second vein not recurrent; first posterior cell closed and stalked and the fourth posterior cell also; anal cell closed and stalked. Alula small; ambient vein complete. *Abdomen*: The abdomen is comparatively robust, the first 2 tergites are at least as wide as the mesonotum; 6 tergites in males. The pile is dense, appressed and setate and there are 6 or 7 slender bristles on the sides of the first tergite, a patch of 6 to 8 or fewer on the sides of the second tergite and 1 or 2, or none on the third tergite and none beyond. Male terminalia partly rotate or wholly rotate. Epandrium undivided, uncleft, with short, blunt, posterolateral process; surstylus short, smaller, broad at base; hypandrium a mere lip-like extension.

Broticosia new genus

Type of genus: *Broticosia rapax* new species.

Small to medium size flies with laterally compressed abdomen and subcircular head and very narrow face. Bristly pile of face concentrated in a mane. Hypandrium drawn out as long, arched process which is curved downward. Length 13 mm.

Head: The face is very narrow and head nearly circular. The pile of the face is abundant and massed into a rather dense, vertical row of very long, slender bristles. Antenna elongate; the first 2 segments combined are about as long as the third segment, the microsegment excluded; this microsegment is long, held at a slight angle, is a little less than one-third as long as the third segment and is spoon-shaped at apex with long, dorsal, spinous bristle. Palpus of 2 segments. *Thorax*: The pile of the mesonotum consists of numerous, very long, fine bristles down the middle of the mesonotum with shorter bristles laterally; acrostical elements differentiated; dorsocentral bristles become extremely long and numerous opposite the wing. Scutellum with some stiff, bristly hairs projecting backward from margin. *Legs*: All femora and tibiae slender.

The hind femur bears 8 bristles, which includes 1 at apex and 2 weak, dorsomedial elements at apex; ventrally there is a moderately abundant fringe of long, fine, stiff hairs. Apex of anterior tibia without spine. Claws sharp; pulvilli well developed. *Wings*: The wings are hyaline and the marginal cell open. Fourth posterior cell narrowed to two-thirds its maximum width; anal cell widely open. Alula narrow and linear; ambient vein complete. *Abdomen*: The abdomen is slender and somewhat compressed. Seven tergites in the male with the eighth present only as a linear flap; all tergites without bristles. Male terminalia large, rotate; the hypandrium long, drawn out into a long process arched downward over the remainder of terminalia.

Broticosia rapax new species

Length 13 mm.

Female. *Head*: The head is black everywhere, including antennae. The pile on the lower third of the occiput is light brownish yellow, except for a fringe of fine, black hairs along the outer margin of the occiput. The pile on the base of the proboscis is yellow, except laterally where it is black. The predominantly black mystax has 3 or 4 yellow hairs in the middle or at the epistomal margin. All other pile and bristles of the face black. The upper part of occiput has long, abundant, very fine, stiff hairs, becoming very slightly stouter dorsally but nowhere becoming bristles. Ventral surface of first antennal segment and a narrow, medial band over the entire length of face and the gibbosity covered with quite long, numerous, slender, black, bristly hairs. Whole face with appressed, whitish pubescence continued on the cheeks. The antenna are quite slender, the third antennal segment is attenuate and bears a short, broad, oval, spoon-shaped microsegment containing a small spine. *Thorax*: The thorax is polished black, scantily covered over the sides of the mesonotum. Scutellar disc and pleuron with an exceptionally fine, whitish micropubescence, which on the anterior half of the thorax is more pollen-like and on the posterior half somewhat coarser. There are fine, long, acrostical, bristly

hairs and equally long or longer dorsocentral hairs and 6 of the posterior, dorsocentral elements somewhat more stout but not conspicuous. There are 2 or 3 stout, long, notopleural bristles, 1 post supraalar, 2 on the post callus. The scutellar margin, however, bears only 3 or 4 pairs of long, slender, yellow, bristly hairs and a few white hairs on the disc. *Legs*: The legs are bright orange brown. The basal half of the hind femora, the extreme base of the other femora, apices of hind tibia, apex of hind basitarsus and the last 4 segments of all of the tarsi black. Bristles reddish orange. Most of the pile is composed of fine, black, appressed setae but the hind femur bears a ventral fringe of long, scattered, white hairs, others dorsally and medially on the basal half and the middle femur has a ventral and dorsal row of whitish pile, the ventral hairs long. Claws slender, black, reddish at the base; pulvilli long and rather slender. *Wings*: The wings are pale brownish hyaline with reddish brown villi densely on the apical and posterior margins widely. *Abdomen*: The abdomen is everywhere polished black with a strong, greenish, brassy reflection. The pile is scanty, fine and white for the most part, short, subappressed dorsally, becoming long and conspicuous though scanty on the sides of the tergites and sternites. Seventh and eighth tergites, especially the eighth, with black setae. On the whole posterior margin of the laterally compressed eighth tergite there is a conspicuous fringe of long, regularly spaced, slender, black bristles, the elements rather widely separated. The whole abdomen seems to be somewhat compressed laterally but this may not be natural.

Type: Female; National Park, Darling Range, West Australia, October 18, 1931, Harvard Australian Expedition. Collected by P. J. Darlington. Type in the Museum of Comparative Zoology.

Aplestobroma new species

Type of genus: *Aplestobroma avida* new species.

Medium size flies, characterized by cylindroid, narrow abdomen and subcircular, narrow face. Male with long, dorsally placed, protuberant, curved hypandrium. Female

terminalia deeply recessed and without spines. Length 16 mm.

Head: The face is scarcely visible in profile on upper part and only moderately protuberant below; from anterior aspect the head is subcircular and the face quite narrow. Palpus of 2 segments. Proboscis short and stout. Antenna elongate, slender, longer than the head; first 2 segments subequal. Third segment slender with parallel sides to the middle and gently tapering beyond; it bears a short, stout microsegment with large, apical opening and short spine. *Thorax*: The pile is scanty and fine, composed of long, erect, or subappressed setae; it bears a single row of acrostical elements, a double row of dorsocentral elements which become long opposite the wing and beyond. Lateral bristles are well developed; scutellar margin with 1 pair of stout bristles or 2 to 8 pairs of slender, weak bristles. *Legs*: All the femora and tibiae are slightly elongate and rather slender. Bristles moderately well developed on the legs; the hind femur has as many as 20 bristles, of which the lateral row may contain as many as 9 or as few as 4; base ventrally with 3 and apex dorsally with 3 bristles. Apex of anterior tibia without spine. Claws sharp; pulvilli long and well developed. *Wings*: The marginal cell is widely open; the posterior branch of the third vein ends at or barely above the wing apex; the posterior branch ends well behind the apex. Fourth posterior cell closed and stalked. Anal cell widely open. Ambient vein complete. *Abdomen*: The abdomen is slender and subcylindroid; 7 tergites well developed in the male, the eighth a short flap. Eight well developed segments in females. Male terminalia fully rotate. Epandrium fully cleft; the superior forceps long, each half robust with long, conspicuous process; the hypandrium forms a long, medial, curved process arched downward over the other parts. Female terminalia deeply recessed and without spines on acanthophorites.

Aplestobroma avida new species

Length 16 mm.

Male. *Head*: The head is black. Ocellarium and most of the immediate post vertex bare and polished, although

a narrow stripe of yellow pollen runs from the cervix to the back of the ocelli. Front with scanty, yellow pollen, somewhat more conspicuous on the upper half; side of front with 4 slender, black bristles on each side, face with dense, appressed, pale yellow pubescence continued on to the cheeks. Lateral occipital pubescence of the same color. The bristly pile of the lower occiput and its coarse hairs pale yellow. On the upper half there are only numerous, slender, black bristles in several rows, stouter above but never very stout, the dorsal elements strongly proclinate. Ocellarium bristles black and very weak. Mystax of face composed of numerous, long, moderately stout, yellowish white bristles in a high, medial triangle on the lower fourth of face, which is barely produced. Upper face with 2 vertical rows of long, bristly, yellow hairs which become longer dorsally and curve downward. Proboscis and antenna black, bristles and hairs of the former yellow, of the latter black. Second antennal segment not as long as the first segment, third segment a little attenuate with short, cylindrical microsegment, which bears at its apex a small spine. *Thorax*: The thorax is black, opaque with well differentiated, fine, acrostical and dorsocentral rows of setae. The dorsocentral row posteriorly has 4 stout and 6 weak, long bristles. Humerus and whole lateral margins and a short, medial, prescutellar wedge-shaped stripe pale yellow micropubescent. Whole disc of the flat scutellum with similar, paler pubescence. Upper half of mesopleuron and whole pleuron except the greater part of the mesopleuron is yellowish micropubescent. Coxae and trochanters black. *Legs*: The legs are very pale, reddish brown; apices of all of the tibiae and femora narrowly blackish. Tarsi black, except the basal half of the basitarsus, all of which are reddish. Claws moderately sharp; pulvilli well developed. *Wings*: The wings are almost hyaline, but everywhere with sparse, greyish villi, except that much of the basal cells are bare. *Abdomen*: The abdomen is black to and including the base of the sixth tergite and sternite; beyond this point the abdomen is light brownish orange. Pile of the abdomen pale yellow, more reddish on the orange colored, apical segments and appearing dark

in some lights on the black tergites. Base of the third to sixth tergite and middle of the second with a transverse band of sparse, greyish yellow pollen or micropubescence. These bands, however, do not extend down upon the sides of the segment. Male terminalia entirely light orange brown.

Female. The female is similar to the male, with the terminalia deeply recessed.

Type: a female; Mt. Lookout, New South Wales, collected Dec. 16th, 1952 and presented to the author by Dr. I. M. Makerras. Paratypes 3 males and 3 females from Tubrabucca, New South Wales, Jan. 10-23, 1948, R.R.M.P. and A.N.B., 1 pair in the author's collection, 2 pairs in the National Museum at Melbourne. 1 paratype male, Barrington Tops, Jan. 25, S.U. Zool. Exped., 1 paratype female, Mt. Gingern, Jan. 14, 1950, S.J. Paramonov, both in the C.S.I.R.O. collection, Canberra, A.C.T.

A NEW GENUS AND SPECIES OF ANTHICIDAE FROM WESTERN UNITED STATES

By Floyd G. Werner
University of Arizona, Tucson

The first specimen of the interesting beetle described here was taken by Dr. W. L. Nutting and the author under dried flakes of mud on an alkali flat in Nevada in 1950. A diligent search in this rigorous habitat resulted in our obtaining one specimen alive, another dead and broken up, a living and a dead specimen of *Tanarthrus salinus* Lec. and one or two living spiders. There was evidence of other insects, present mostly as fragments. Most of these seemed to belong to groups that would have blown in from surrounding areas. A second living specimen was taken by H. B. Leech in sand dunes near Stovepipe Wells, in Death Valley. The two collections indicate a rather extensive range for the species in the West, possibly confined to extreme desert areas.

Despite the shortened elytra, this insect is quite obviously an Anthicid. On first appearance it might be linked with such an insect as *Tanarthrus brevipennis* Csy., a species which also has abbreviated elytra. There are several striking points of difference. The present insect is much more slender than any known species of *Tanarthrus*. It has the last segment of the antennae entire and normal, without the groove that gives the illusion of dividing the last segment into two in *Tanarthrus*. There are major differences in the internal sac of the male genitalia. All the species of *Tanarthrus* except *T. salinus* have been examined and they have heavy spines on the internal sac and lack any specialized armature around the gonopore. The present insect lacks spines on the internal sac and has a peculiar structure associated with the gonopore, completely unlike any found elsewhere in the family, at least as it is represented in North America. The general shape of the genitalia is similar in the two genera. It seems

best to designate this as a new genus and place it near *Tanarthrus*, but with some doubt as to its affinities.

Leptanthicus gen. nov.

Slender and flattened, with short elytra that leave the main part of the abdomen exposed. Metathoracic wings present but folded under the elytra in repose. Antennae normal and with the last segment not divided into two apparent segments by a groove. Mouth parts apparently normal, with the last segment of the maxillary palpi not expanded or otherwise modified. Pronotum rather slender, without any obvious modifications. Mesosternum not expanded laterally, the margins straight and ending near the outer edges of the mesocoxae. Legs not modified in the male, with two spurs on all the tibiae. Male genitalia without separate parameres, slender and pointed as in *Tanarthrus*. Internal sac without spines but with a complex and unique structure around the gonopore. Type of genus *Leptanthicus staphyliniformis* sp. nov.

Leptanthicus staphyliniformis sp. nov

Holotype ♂: almost uniformly brown in color, with darker abdomen and paler elytra, antennae, palpi, tibiae and tarsi. Surface generally finely punctured, with short and fine but moderately dense pubescence, not conspicuous except under some magnification and with longer, erect tactile setae scattered over the dorsal surface of the body. Length, to tip of elytra 1.97 mm., to tip of abdomen ca. 2.68 mm. Width: head 0.46 mm., pronotum 0.41 mm., and elytra ca. 0.56 mm.

Head narrowly quadrate, flattened, the disc almost flat, 0.51 mm. long to base of clypeus and 0.46 mm. wide. Surface subopaque because of moderately dense but fine microreticulation; pubescence short, about 0.02 mm. long, mostly subdecumbent and slightly curved, fine and directed toward the midline on the disc. Eyes small, 0.17 × 0.13 mm., placed well onto the sides and protruding only slightly from the sides of the head; with short, erect pubescence. Fronto-clypeal suture distinct though short. Bases of antennae separated by 0.18 mm. Clypeus fairly broad, 0.23

mm. wide, 0.08 mm. long, with a pair of obscure teeth on its anterior margin and a pair of slight angulations near the sides; setae longer, ca. 0.08 mm., slightly curved and projecting forward. Labrum largely concealed by the clypeus from above, evenly rounded. Mandibles projecting beyond labrum, pointed and bifid at the tip, the upper tooth the longer. Maxillary palpi fairly large, the last segment 0.13 × 0.08 mm., obliquely truncate. Labial palpi very small. Antennae submoniliform, 1.06 mm. long, with numerous erect setae. Measurements (in 0.01 mm., base to apex): 15 8, 10 6, 9 5, 8/5, 8/5, 8/5, 8/5, 8/5, 9/6, 8/6, 14 6. The second segment is relatively large, the last bluntly pointed.

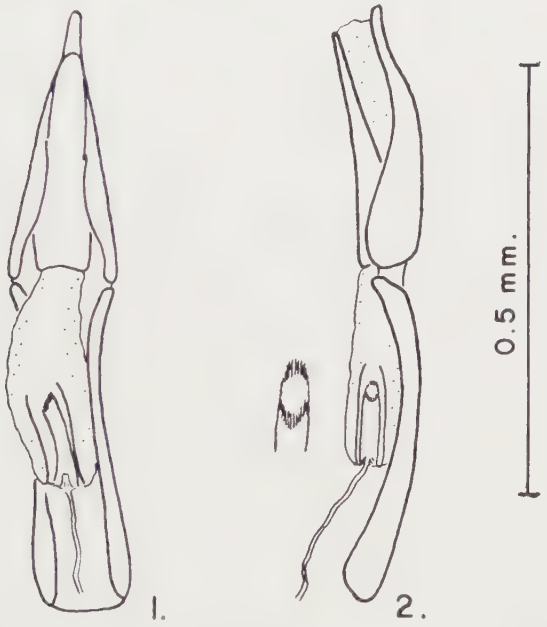


Figure 1. *Leptanthicus staphyliniformis* sp. n. Genitalia of holotype ♂. Fig. 1. Ventral view as the genitalia lie in the abdomen. Fig. 2. Lateral view and enlarged detail of apex of gonopore armature.

Pronotum 0.51 mm. long, 0.33 wide at base, 0.20 at collar and 0.44 at the widest point about 1/5 from the

apex. Sides almost straight to the widest point, then rounding to collar. Disc flattened, with pubescence similar to that of head but surface more deeply microreticulate. Scutellum fairly small, rounded. Elytra subparallel, 0.95 mm. long, 0.46 mm. wide at humeri, ca. 0.56 at widest. Apices obliquely truncate, individually rounded at the suture. Surface smoother than head; pubescence moderately dense, suberect, slightly curved, fine. Three full segments of the abdomen are left exposed, plus the pygidium. These are well sclerotized and separate from each other. They have pubescence similar to that on the elytra but sparser. The first two exposed tergites are subquadrate and delimited on the sides by the exposed edges of the sternites; both have a pair of dense patches of decumbent, medially directed pale pubescence near the middle, the patches on the anterior segment much the larger. Third exposed segment reaching sides of body, with only a very narrow edge of the sternite visible, larger than the first two, somewhat arched and rounded behind. Pygidium barely visible, the edge rounded and slightly beaded.

Surface and pubescence below similar to that on dorsum of abdomen. Prosternum a flattened, hexagonal plate, with a point extended back between the procoxae. Mesosternum not expanded, forming a straight line with the medial edge of the mesepisternum, the lateral edge of which extends dorsally into a narrow lobe anterior to the base of the elytra, this lobe following the body contour and not provided with long setae on its free edge. Metasternum flattened but quite normal. Fifth visible abdominal sternite truncate apically, the edge very gently excavated. Legs apparently normal, moderately slender, paler than the body except for the femora, tips excluded. Pubescence on legs moderately dense, subdecumbent. Tibiae with two, apparently simple, slender apical spurs. Tarsal claws slender, simple. Tarsal segments simple, the penultimate indistinctly lobed beneath. Measurements of metathoracic leg in 0.01 mm.: femur 56 × 13, tibia 54 × 8, tarsus 33 × 5.

Paratype ♀: a larger and darker specimen, 2.35 mm. long to tip of elytra, ca. 3.12 to tip of abdomen. Head

0.59 mm. long, 0.49 wide; pronotum 0.61 mm. long, 0.42 wide; elytra 1.15 mm. long, 0.56 wide at humeri, ca. 0.77 at widest. Differences that are of a secondary sexual nature are: third exposed abdominal tergite not as arched; pygidium absent; fifth visible abdominal sternite large, the hind margin almost evenly rounded, slightly ogival. Other differences that may indicate individual or population variation are: hind margin of head slightly excavated at the middle; elytra and appendages almost as dark as rest of body and the pubescent patches on the abdominal tergites dark. The scattered, erect tactile setae are ca. 0.06 mm. long in the holotype, ca. 0.13 mm. in this specimen and therefore much more conspicuous. The labrum extends beyond the clypeus when viewed from above.

Holotype: ♂ — Mud flats next to alkali lake at Salt Wells, Churchill Co., Nevada, May 31, 1950, F. G. Werner and W. L. Nutting. Deposited in the M. C. Z. Paratype: 1 ♀ — Sand dunes near Stovepipe Wells, Death Valley, Inyo Co., California — April 2, H. B. Leech, in the Calif. Acad. Sci.

SPIDERS OF THE NEW GENUS *ARCTACHAEA* (ARANEAE, THERIDIIDAE)

By Herbert W. Levi

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The new spider genus *Arctachaea* is erected for two rare species from western North America, closely allied to *Theridion*. *Arctachaea* differs from the latter in abdomen shape and in structure of the genitalia. The rarity of the two species accounts for the belatedness of their description.

Dr. W. J. Gertsch of the American Museum of Natural History and Dr. R. V. Chamberlin of the University of Utah have made specimens available to me. I extend my sincere thanks for their cooperation.

Arctachaea, new genus

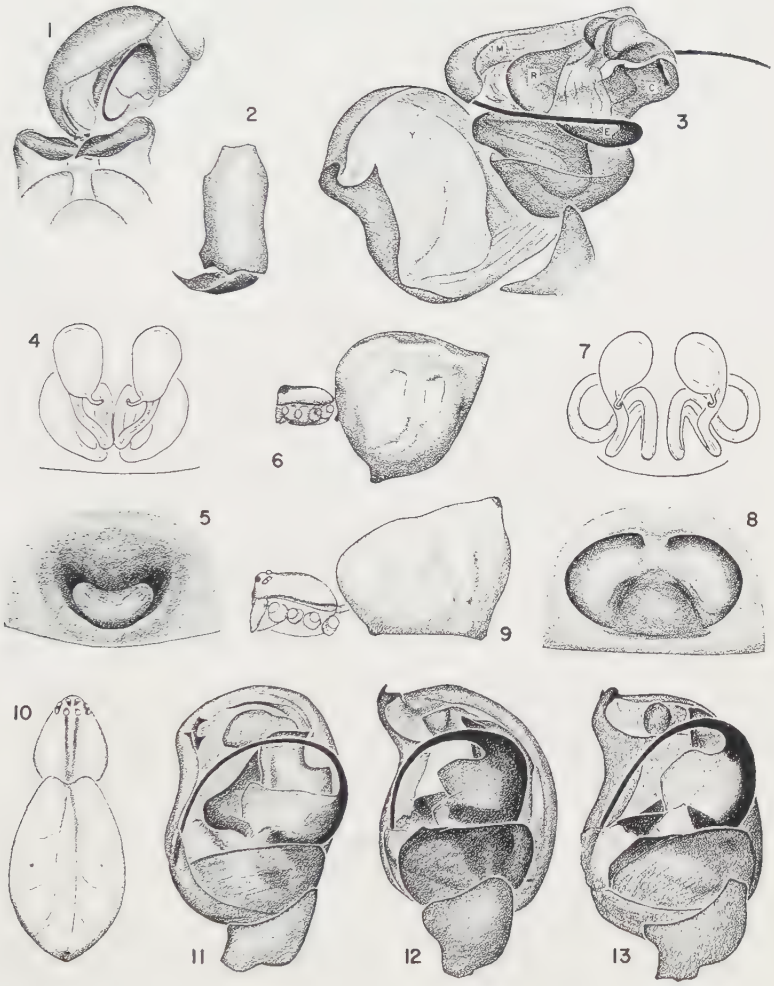
Arctachaea (fem.) has *Arctachaea pelyx* as type species.

Medium sized theridiid spiders. Carapace longer than wide, thoracic depression indistinct. Eyes subequal in size, anterior eye row procurved as seen from front, posterior row straight as viewed from above. Chelicerae lacking teeth. Sternum convex. First leg longest, fourth or second leg in males second in length, third shortest. Tarsal comb with few setae. Abdomen slightly longer than high with a distinct dorsal posterior hump. Colulus absent.

Epigynum a raised area. Palpus with median apophysis

Explanation of Plate 8

Figs. 1-2 *Arctachaea nordica* (Chamberlin and Ivie) Fig. 1. Ventral view of chelicerae and palpus. Fig. 2. Anterior view of left chelicera. Figs. 3-6. *A. pelyx* new species. Fig. 3. Left palpus, expanded (C, conductor; E, embolus; M, median apophysis; R, radix; Y, cymbium). Fig. 4. Female genitalia, dorsal view. Fig. 5. Epigynum. Fig. 6. Female. Figs. 7-11. *A. nordica* (Chamberlin and Ivie). 7. Female genitalia, dorsal view. 8. Epigynum. 9, 10. Female. 11. Left palpus. Figs. 12-13. *A. pelyx* new species. 12. Palpus (Utah). 13. Palpus (Oregon).



LEVI — ARCTACHAEA

(M in Fig. 3), radix (R), conductor (C) and a long embolus (E). The cymbium (Y) is modified at its tip.

Arctachaea differs from *Theridion* by having a hump on the abdomen (Figs. 6, 9, 10), and in the shape and direction of the embolus. It differs from both *Theridion* and the closely allied *Chrysso* in having the tip of the male cymbium modified (Fig. 3). *Arctachaea* can be separated from *Achaearanea* which has a similar shaped abdomen in that the former has a radix in the male palpus while the latter genus does not.

Arctachaea pelyx new species
Plate 8, Figures 3-6, 12, 13; Map 1

Types. Male holotype from East Canyon, Salt Lake County, Utah, June 12, 1943 (W. Ivie) in the American Museum of Natural History.

Description. Carapace yellow-white with a median dusky band, narrowest posterior, enclosing eye region and continuing as a line across the clypeus; sides of carapace with a dusky line. Sternum with a black border on each side. Legs with some black spots. Abdomen (Fig. 6) yellow-white with a dusky median dorsal band bordered by white. Anterior median eyes separated by one and one-quarter diameters, one-quarter from laterals. Posterior eyes separated by one diameter. Abdomen with a tubercle (Fig. 6) that of male longer than high. Epigynum with a light swollen area illustrated by Figure 5, palpus by Figures 12, 13. Total length of female 3.2 mm. Carapace 1.02 mm. long, 0.92 mm. wide. First femur, 1.71 mm.; patella and tibia, 1.85 mm., metatarsus, 1.58 mm.; tarsus, 0.68 mm. Second patella and tibia, 1.11 mm.; third 0.78 mm.; fourth 1.24 mm. Total length of male 2.7 mm. Carapace 1.15 mm. long, 1-10 mm., wide. First femur 2.71 mm.; patella and tibia 3.05 mm.; metatarsus 2.72 mm.; tarsus, 0.91 mm. Second patella and tibia, 1.63 mm.; third, 1.05 mm.; fourth, 1.70 mm.

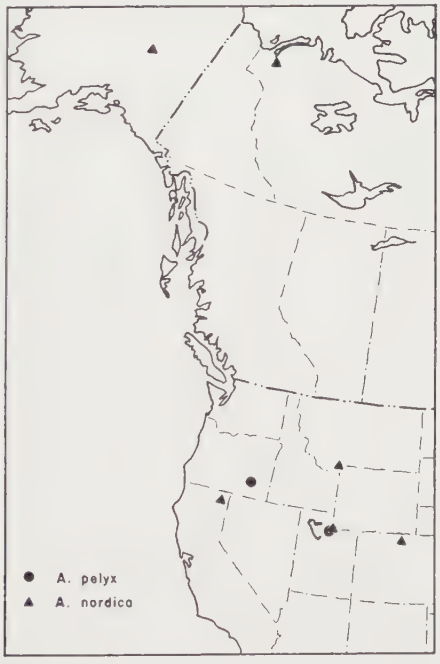
Records. Utah: Salt Lake Co.: East Canyon, June 14, 1942, ♀ paratypes; June 21, 1942 ♀ paratypes; June 12, 1943, ♀ allotype, ♀ ♂ paratypes (W. Ivie). Summit Co.: 3 mi. W. of Wanship, June 20, 1941, ♀ ♂ (W. Ivie). *Oregon.*

Harney Co.: above Fish Lake, Steens Mtn., 18 mi. E. of Frenchglen, 7000-8000 ft., July 14-16, 1953, ♂ (V. Roth).

Arctachaea nordica (Chamberlin and Ivie)
Plate 8, Figures 1-2, 7-11; Map 1

Achaea nordica Chamberlin and Ivie, 1947, Bull. Univ. Utah, biol. ser., vol. 37, p. 25. (Juvenile male holotype from College, Alaska, in the American Museum of Natural History).

Description. Carapace white, with a double median line and a dusky border. Sternum with a narrow dusky border. Legs white. Eyes on small black spots, anterior medians



Map 1. Distribution of *Arctachaea nordica* (Chamberlin and Ivie) and *A. pelyx* new species.

one and one-third diameter apart, one-half from laterals. Posterior medians separated by less than their diameter, by one from laterals. Abdomen white with a black spot

on posterior tip (Figs. 9, 10). Epigynum with two anterior swollen areas, and a posterior median depression (Fig. 8). Palpus of male very large (Fig. 11), cymbium 0.65 mm. long, teeth of cymbium fitting against enlarged fang (bearing phlanges on each side) as illustrated by Figure 1. Total length of female from Montana 3.0 mm. Carapace, 1.12 mm. long, 0.97 mm. wide. First femur, 2.20 mm.; patella and tibia, 2.32 mm.; metarsus, 1.95 mm.; tarsus, 0.71 mm. Second patella and tibia, 1.35 mm.; third, 0.91 mm.; fourth 1.56 mm. Total length of male from Colorado 2.7 mm. Carapace, 1.24 mm. long, 0.98 mm. wide. First femur, 2.60 mm.; patella and tibia, 2.74 mm.; metatarsus, 2.40 mm.; tarsus, 0.85 mm. Second patella and tibia, 1.72 mm.; third, 0.92 mm.; fourth, 1.62 mm.

Records. Northwest Territories: Reindeer Depot, 68°42′: 134°06′, July 1-6, 1948, ♀; Aug. 1948, juv. ♀, juv. ♂ having enlarged fangs (J. R. Vockeroth). *Montana.* Gallatin Co.: Red Cliff Camp Ground, Gallatin Valley, meadow, Aug. 18, 1951, ♀ (H. and L. Levi). *Colorado.* Larimer Co.: Estes Park, 7800 ft., 1953, ♂ (H. and A. Jungster). *Utah.* Salt Lake Co.: East Canyon, June 12, 1943, ♀ (W. Ivie). *California.* Modoc Co.: 20 mi. N. of Canby, June 6, 1944, ♂ (W. M. Pearce).

EPICAUTA DUGESI A VALID SPECIES (COLEOPTERA: MELOIDAE)

By F. G. Werner

University of Arizona, Tucson

Some small samples of *Epicauta* from the states of Nayarit and Sinaloa in Mexico apparently represent the species described by Dugès from San Potosí as *E. vittata* and designated as *E. dugesi* by Beauregard. A single specimen, probably a female, remains from the Dugès series in the collection of the Instituto de Biología in Mexico City. Champion did not see any specimens from Mexico but decided that Dugès had *lemniscata* (Fab.) from his description. *Dugesi* has remained in synonymy with that species ever since.

The male of *dugesi* differs in several features from the species most closely related to it, *vittata* (Fab.), *lemniscata* (Fab), *occidentalis* Werner and *vitticollis* (Haag). All of these have the pad of protarsal segment 1 of the male slightly heavier than in the female, covering the ventral surface of the segment and extending onto the ventral third to half of the posterior surface. In the male of *dugesi* the pad is highly developed, covering the ventral surface and extending over all of the posterior surface except for a very small area dorsally at the base, and is much different from the simple pad of the female. The succeeding protarsal segments reflect the condition of the first in all these species. Protarsal segment 1 is thicker, slightly broader and proportionately shorter in *dugesi* than it is in the other species; it differs radically from the first segment in *occidentalis* because that species has all the segments of the protarsi much more slender than they are in the others. A further difference is that the inner (anterior) protibial spur of the male of *dugesi* is definitely curved, while it is straight or nearly so in the others. Both sexes of *dugesi* have the head more deeply punctured than the other species, with less of an indication of a median smooth area on the front. The mark-

ings are little different from those of typical *lemniscata;* the outer two dark stripes on the elytra are perhaps a bit closer and more diffuse than would be normal for that species. The antennae are essentially as in *lemniscata.* These comparisons are based on 4 ♂♂, 1 ♀, Tepic, Nayarit, July 20, 1955; 1 ♀, Mazatlán, Sinaloa, July 21, 1955, and 2 ♂♂, 2 ♀♀, Los Mochis, Sinaloa, July 22, 1955, all collected at light by R. B. & J. M. Selander. The following synonymy for *dugesi* now applies:

Epicauta dugesi Beauregard

Epicauta vittata Dugès, 1886, Bull. Soc. Zool. France **11**: 582 (*nomen nudum*); 1889, An. Mus. Michoacano 2: 87. Not *Epicauta vittata* (Fab.), 1775.

Epicauta dugesi Beauregard, 1889, Bull. Soc. Ent. France 14: ccxiii. (Substitute name for *vittata* Dugès nec Fabricius).

Epicauta lemniscata, Champion, 1892, Biol. Cent.-Am., Coleop. 4 (2): 415, as applied to Mexican specimens. Not *Epicauta lemniscata* (Fab.), 1801.

Another male specimen collected at light by the Selanders, at Tehuantepec, Oaxaca, June 24, 1955, is quite similar to *dugesi* in form of protibial spurs and sculpture of head but has protarsal segment I dorso-ventrally flattened and broadened, with a broad pad on this segment confined to the ventral surface. It probably represents still another in this complex of species.

THE INDO-AUSTRALIAN SPECIES OF THE ANT GENUS *STRUMIGENYS* FR. SMITH: *S. DECOLLATA* MANN AND *S. ECLIPTACOCA* NEW SPECIES[1]

By William L. Brown, Jr.

Museum of Comparative Zoology, Harvard University

This paper is a further contribution in a series which, when complete, will cover the Indo-Australian portion of the world fauna of the dacetine ant genus *Strumigenys* Fr. Smith. Previous parts, the first two of which include explanations of the abbreviations used for citing measurements and indices, are in *Psyche* 60: 85-89 (1953), 60: 160-166 (1954), 61: 68-73 (1954) and 63: 113-118 (1957).

The purpose of this part is to furnish supplementary descriptive material on *S. decollata,* known only from the type material from the Solomon Islands, and to formally describe a new species, *S. ecliptacoca,* from wet mountain forest in Dutch New Guinea. These two species are peripheral members of the *godeffroyi* group, both aberrant in a number of respects. They have in common processes situated near the midlength of the inner mandibular borders — in *decollata* an acute denticle, in *ecliptacoca* a low welt or ridge — which are quite different from anything seen in other Indo-Australian *Strumigenys* species. Whether these two species are related to each other at all closely is problematical, but it is convenient to consider them together here. Figures of both species have been prepared, but are being saved for use in collective plates in connection with the eventual keys to all the Indo-Australian species of the genus.

Strumigenys decollata Mann

Strumigenys decollata Mann, 1919, Bull. Mus. Comp. Zool.,

[1]Published with the aid of a grant from the Museum of Comparative Zoology at Harvard College.

63: 353 figs. 32, 33, worker, male. Type loc.: Fulakora, Santa Isabel I., Solomons Islands.

Lectotype worker (by present selection) in MCZ: TL 4.4, HL 1.11, ML 0.66, WL 1.05; CI 63, MI 59. Agreeing with Mann's figures, except that these show the posterior cephalic and anterior clypeal excisions as considerably deeper than they should be. Fig. 32 of Mann also portrays the scapes as too slender, and the small proximal preapical tooth of the mandible is shown as much lower and less acute than in the lectotype.

This species is easily recognized by the long, narrow, depressed head, long mandibles, elongate petiolar node, and by the partially smooth, shining state of most of the areas usually sculptured and opaque in species of this genus. An outstanding character is the presence of the small, triangular, but acute tooth in addition to the preapical tooth of most Indo-Australian *Strumigenys;* this extra preapical tooth is situated proximad of the preapical tooth near the midlength of the inner mandibular border.

Distal preapical tooth of mandible about 5/8 the length of the dorsal apical, situated very slightly distad of the apical third of ML. Teeth of apical fork subparallel, the ventral tooth 2/3 the length of the dorsal tooth; one small acute intercalary tooth.

Peticlar node a little less than (not "more than") twice as long as broad. Mann gives the color as reddish brown; the lectotype and another headless syntype are more yellowish, and may be teneral.

Male, from type series, MCZ: TL 3.2 mm. Color now is deep ferruginous; head deeply, alitrunk dorsum lightly, infuscated; legs and antennae sordid yellowish. Notauli complete and deep; parapsidal furrows present; no propodeal teeth. Nodes shaped as in worker, smooth and shining, but spongiform appendages and basigastric costulae obsolete. Mandibles not "bidentate," but with an expanded, convex inner margin basally and a single straight, acute apical tooth. Fore-wing venation much reduced, with only R + Sc to pterostigma, stigma itself and 2r defined, and these scarcely pigmented. Few other veins represented by indistinct colorless furrows. Both wings glassy and clear, with

very few microtrichia, especially near bases; hindwing with 4 subapical hamuli.

Strumigenys ecliptacoca sp. nov.

Holotype worker: TL 2.8, HL 0.68, ML 0.35, WL 0.71; CI 65, MI 51. Antenna, scape L 0.47, funiculus L 0.62, apical segment 0.35. Head in facial view shaped much as in *S. mayri*, but rather narrow and with periocular areas more as in *godeffroyi*, i.e. without distinct preocular notches. Occipital lobes rather narrowly rounded behind, occipital excision broad and fairly deep, lateral borders of lobes broadly and evenly rounded. Dorsal surface of head evenly convex in both directions, without appreciable sulci or depressions in occipital area. Eyes rather large and convex, but not prospicient, the principal axis directed laterally. Preocular area only feebly concave; preocular laminae anterior to the concavity weakly convex in outline, as seen from dorsal view. Clypeus with anterior border medially impressed and strongly excised. Antennal scrobes indistinct, though not suddenly interrupted posteriorly; continuing above and behind the eyes to a distance equalling 2½ eye diameters, but traceable only with difficulty, if at all. Antennal scape very slender and curved so as to allow it to fit the curve of the side of the head when retracted, as in *szalayi* group. Funicular segment I slightly longer than II-III; II and III as broad as or slightly broader than long; IV longer and stouter than I, and nearly as thick apically as is the apical segment at midlength; apical segment longer than I-IV taken together, slender and fusiform.

Mandibles slender, depressed, feebly arcuate, their inner borders nearly straight from near base to preapical tooth, after which they curve evenly in to apical fork; extreme bases distinctly narrowed and bent slightly inward, their insertions separated and situated beneath the small lobes on each side of the clypeal excision. Shafts extremely slightly and gradually broadened from base toward preapical tooth, lying so as to diverge slightly from each other at full closure. Apical fork of two parallel slender spiniform teeth, the dorsal tooth (L ca. 0.12) about 1½ times as long as ventral tooth; a single small, acute intercalary denticle present. Pre-

apical tooth slender, spiniform, extremely feebly curved, about as long as the ventral apical tooth, situated at or very near the apical quarter of the mandibular length; distant from the dorsal apical tooth by approximately its own length. Inner mandibular borders at midlength each with a small, very low, translucent, sublamelliform process or welt, rising gradually basad and continuing apicad only a short distance before terminating suddenly in more or less of an angle. This short ledge or welt is inconspicuous, and is best seen in silhouette by light reflected from a white surface held below the mandibles.

Alitrunk slender, formed much as in members of the *szalayi* group, with the promesonotum a bit more gently and evenly rounded above, but the mesonotum concave behind and the propodeal dorsum very feebly convex, yielding the same "sway-back" appearance. Propodeal declivity gently concave, the teeth reduced to minute, subacute tubercles or angles, chiefly responsible for the angularity of the propodeum seen from the side. Infradental lamellae completely obsolete. Petiole subclavate, node longer than broad, very low and gently rounded above, not very distinctly differentiated from, and slightly longer than, its anteriorly tapered peduncle. Spongiform posterior collar narrow, with small lateral lobes extending a short distance anteriorly along the sides of the node; midventral strip well developed. Postpetiole subquadratic seen from above, nearly as long as broad (W 0.15) and a little broader than the petiolar node; with well developed, areolate spongiform masses.

Gaster with a narrow transverse dorsal spongiform border. Basal costulae fanning from bilateral origins, on the sides extending up to 1/3 the length of the basal tergite; almost completely effaced in the middle, and much shorter. Remainder of gaster smooth and shining, as are also the postpetiole, propodeum, sides of alitrunk, posterior dorsum of petiolar node, fore coxae, clypeus and mandibles. Head and legs otherwise densely punctulate and opaque. Dorsum of pro- and mesonotum weakly punctulate, subopaque to feebly shining.

Dorsum of head with a scanty growth of very fine inconspicuous reclinate hairs and about 12 moderately long, fine

erect hairs; clypeal border hairs fine, subspatulate, inconspicuous. Antennal scapes with short, fine subreclinate hairs, directed apicad. Alitrunk dorsum with pilosity like that of head, but considerably sparser; paired fine erect hairs on humeri and anterior mesonotum. Nodes and gastric dorsum with a very few fine hairs slanting caudad. Few short subflagellate hairs at gastric apex. Underside of head and legs with moderately dense, fine, short reclinate pilosity. Color rather uniform light ferruginous yellow.

Holotype a worker selected from a series of 41 workers and dealate females taken together with eggs, larvae and pupae in an "ant plant" at Camp of I I 1939, Netherlands Indies-American New Guinea Expedition (Third Archbold Expedition) of 1938-1939, altitude 1800 M. (L. J. Toxopeus leg.). Deposited with paratypes in Zoologisch Museum en Laboratorium, Bogor, Indonesia. Some paratypes in MCZ and elsewhere. (See Archbold, Rand and Brass, 1942, Bull. Amer. Mus. Nat. Hist., 79: 246-250, and Toxopeus, 1940, Treubia, 17: 274, 278, for notes on type locality.

Paratypes, 40 workers from type nest: TL 2.6-2.9, HL 0.65-0.69, ML 0.33-0.35, WL 0.66-0.72; CI 63-65, MI 51. Varying slightly in shape and opposite-mandible symmetry of the welts on the inner mandibular borders. The propodeal teeth also vary slightly in distinctness and acuteness, but still remain minute and denticuliform at best.

Paratypes, 2 dealate females from type nest: TL 3.3-3.3, HL 0.73-0.74, ML 0.36-0.36, WL 0.85-0.86; CI 68-67, MI 49-49, respectively. Showing the usual caste differences for the genus. Propodeal teeth low, subtriangular, but definitely dentiform. Mesonotum evenly punctulate, with a few fine, erect hairs. Infradental lamellae present as fine lines or low carinae. Side sclerites of alitrunk largely smooth and shining, as is propodeal declivity; dorsum of alitrunk completely punctulate. Basal gastric costulae relatively stronger and longer than in worker. Color slightly darker and more brownish. (Male unknown.)

Pupae: Mandibles open at more than 180° angle, as in *szalayi* group.

This species appears to fall between the *szalayi* group and such *godeffroyi* group species as *esrossi*. It differs from all

other Old World *Strumigenus* in lacking both propodeal teeth and their lamellae, and is also distinct in having the welt-like lamella on the inner mandibular border, which may represent a condition intermediate between the broad lamella of *guttulata* and toothed forms like *decollata*. *S. ecliptacoca* (from the Greek words meaning "deficient" and "point or edge") seems best placed arbitrarily in the *godeffroyi* group for the present.

PREDATION OF ARTHROPOD EGGS BY THE ANT GENERA PROCERATIUM AND DISCOTHYREA. — In my recently published revision of the genera of the ant tribe Ectatommini (Brown, 1958, Bull. Mus. Comp. Zool. 118: 246, 252-253, 336) I noted briefly observations indicating that North American species of *Proceratium* Roger (including *Sysphincta* auct.) normally feed on various arthropod eggs, and that such eggs are often stored in their nests in large numbers. One of the nests observed to contain eggs was collected by E. O. Wilson and myself at Ravenel, South Carolina, during June, 1957. This nest was packed with spherical eggs (and a few smaller fusiform ones); we assumed that they were eggs of geophilomorph centipedes or spiders, both of which were abundant in the leaf litter and rotting pine bark from which the ant nest was taken at the base of a large loblolly pine. This nest was maintained for one year in a glass-topped plaster ant-chamber, during which time it subsisted entirely or nearly entirely on eggs (more rarely on soft, hatching spiderlings) of various species of spiders gathered in eastern Massachusetts. Larvae of other ants, and parts of other insects, were ignored by the *Proceratium* so far as observations went. Spider eggs were stored in the brood chamber and in adjoining chambers. In feeding on the eggs, the workers and queen hold the egg against the floor with their forelegs and cut through the shell, immersing their mandibles in the egg contents. Partly deflated eggs are placed on the larvae, which feed directly.

My speculation that the similar genus *Discothyrea* might also feed on eggs of other arthropods now tends to be confirmed by an interesting find by Philip F. Darlington, who has collected four nests of *Discothyrea bidens* Clark (or near) in the Mt. Royal Range, near Barrington Tops, northeastern New South Wales, during October, 1957. Each nest contained numerous eggs of arthropods: spherical eggs (of spiders or Chilopoda?) from about 0.08 to 0.26 mm. in diameter, and fewer elliptical ones in two of the nests, averaging 0.17 × 0.08 mm. In the alcohol, none of the larvae is attached to eggs, but the circumstances leave little doubt that the eggs were being stored as food. — W. L. BROWN, JR., Museum of Comparative Zoology.

A Pliocene Insect Deposit In Texas. — A few years ago numerous insects were found by Dr. Roy Reinhart of Miami University in a shale exposed along the Rita Blanca Creek near Channing, Texas. My attention was called to these fossils by Mr. Jack T. Hughes, Curator of Anthropology at the Panhandle-Plains Historical Museum in Canyon, Texas, who kindly sent some of the museum specimens to me for my examination.

In May of 1957, with Mr. Hughes, and Mr. James A. Corbitt and his sons of Dalhart, Texas, I spent a day collecting at the deposit. The insects occur in several beds of thin shales. which resemble closely those at Florissant, Colorado, and which were apparently formed of volcanic ash that had fallen into a small fresh-water lake. The insects are not nearly so numerous at the Channing deposit as they are at Florissant, however, and, in general, they are not nearly so well preserved. Small flies and beetles are the most numerous types of insects in the shales, but nymphs of dragonflies are not uncommon. Occasionally clusters of nymphs, comprising six or more specimens, can be found. The remains of other organisms, including small fish, also occur in the shale.

The deposit has been generally regarded as being of Late Pliocene age. Extensive collecting might result in enough good specimens to justify a systematic study of the insect fauna. It would certainly be interesting to make a detailed comparison between the fauna of this Pliocene Texas deposit and that of the Early Miocene (or Late Oligocene) Florissant deposit. — F. M. Carpenter, Harvard University.

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